



# Domestic Poultry Surveillance & Preparedness for Avian Influenza

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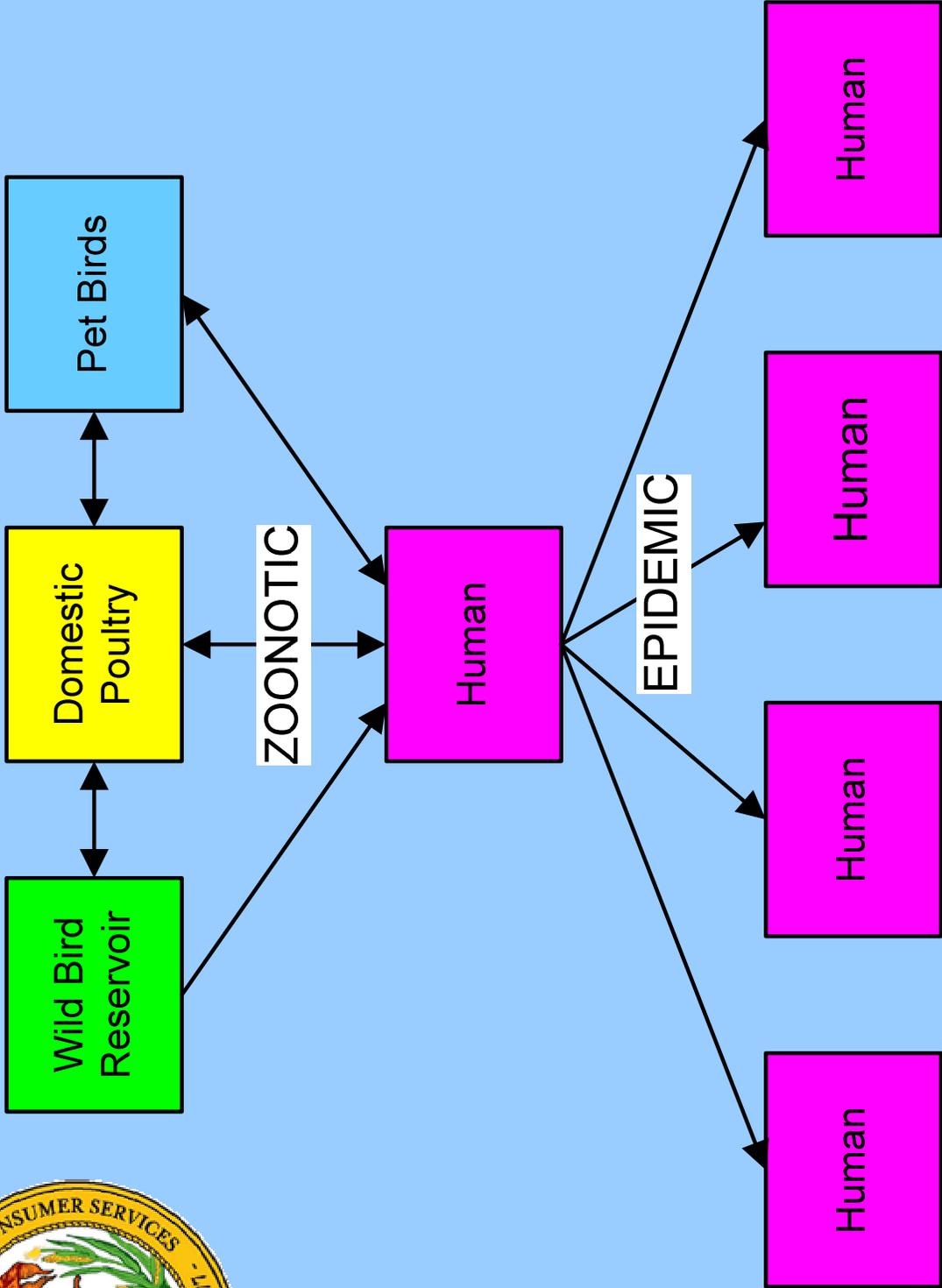


December 7, 2006



# Objectives

- Risks to domestic poultry
- State and national prevention efforts
- NC surveillance strategy
- NC response plan and protocol

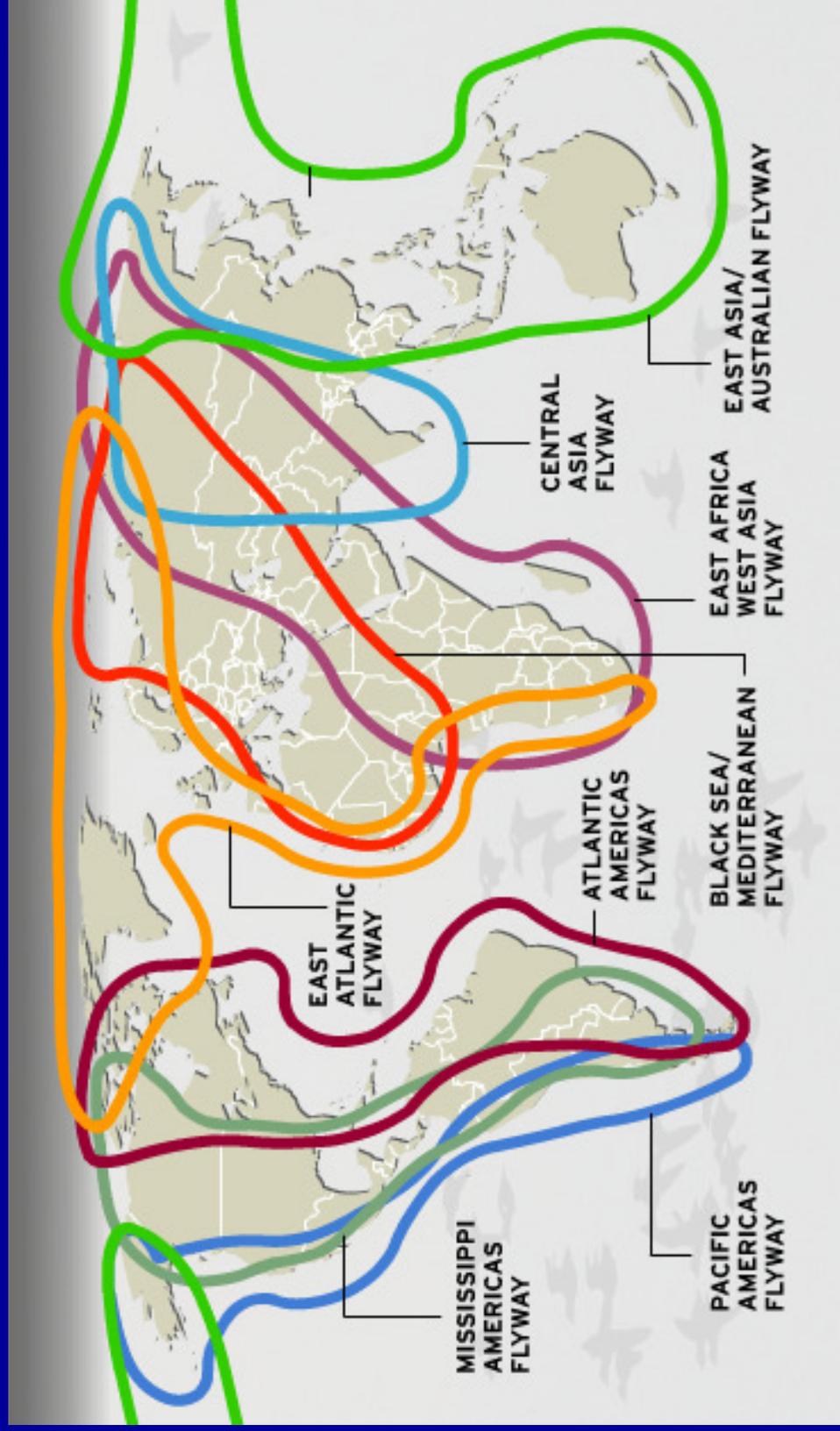




# Routes of H5N1 entry into United States

- Smuggled birds – wild and domestic
- Human movement
- Wild bird migration

# Migratory Flyways – used to be considered primary route of entry; present role unclear





# Illegal bird movement considered likely route for H5N1 introduction

- USDA APHIS Veterinary Services Report:
- Smuggled Birds: A Threat to America's Caged Bird and Poultry Industries
- “Every year, around **25,000 birds** are smuggled into the United States.”



U.S. Customs agents seized more than 40 smuggled birds at the Nogales port of entry in one month (Jan 2006).

- six parakeets,
- five conures,
- four chicks,
- three ducks,
- three doves,
- three canaries,
- two buntings,
- two cardinals,
- two finches,
- two quail,
- one sparrow.





# Smuggled eaglets

- From Bangkok through Vienna to Brussels
- Stored in overhead compartment on each flight
- Falconer had ordered them at price of \$7500 each
- Tested positive for H5N1





# NC Prevention / Preparedness

- NCDA&CS LPAI and HPAI Plans developed
- Strong NCDA&CS & Industry communication / interaction
- Strong State Government communication / interaction: AI Human Health Task Force
- DHHS planning –  
– presentations to follow





# Prevention/Preparedness

- State and local tabletop exercises
- Educational sessions for producers, media
- PPE purchase, training, fit testing
- USDA cooperative agreements
- Experienced- 2002 LPAI H7N2 event contained to 3 commercial farms



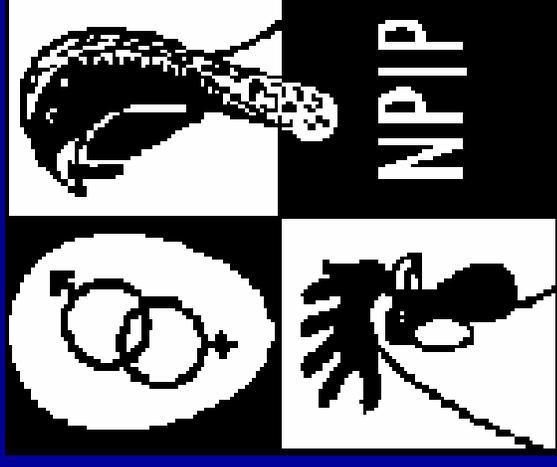
# National Surveillance Efforts

- Department of Interior (DOI)
- USDA – APHIS
  - Wildlife Services
  - Veterinary Services
- National Poultry Improvement Plan (NPIP)
- State-Federal Cooperative Agreements – diagnostic submissions, exhibiton and backyard bird sampling



# National Surveillance: NPIP

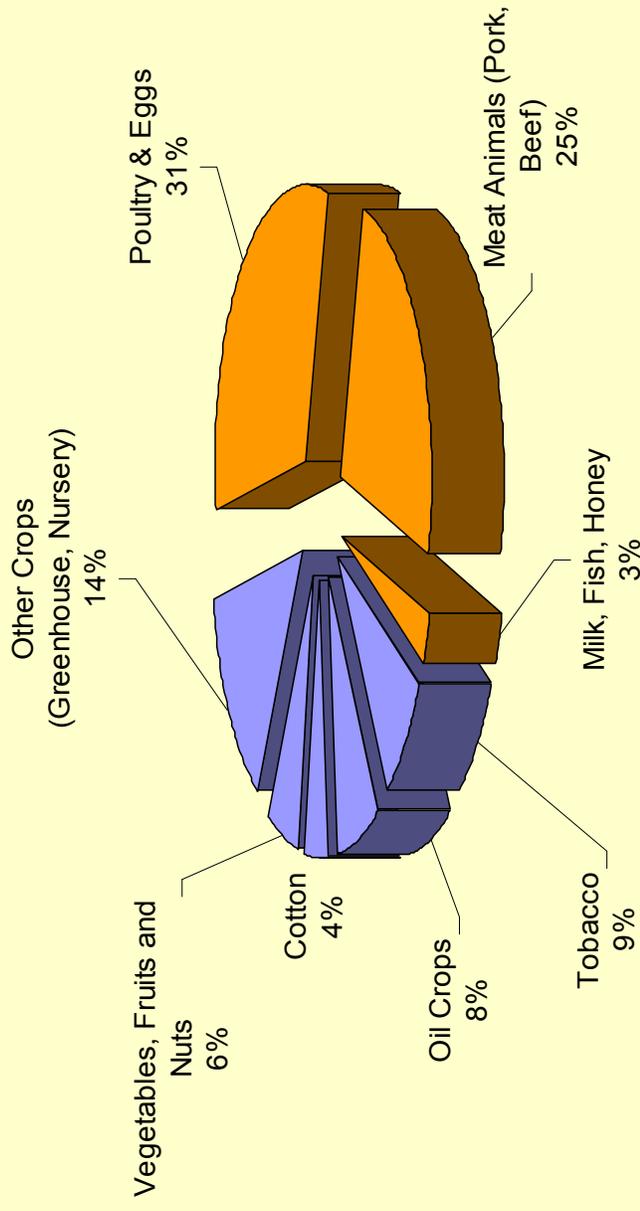
- Establishes standards for evaluation of poultry breeding stock and hatchery products
- “Avian influenza free” certification for commercial companies
- New AI program that will provide for H5 and H7 AI monitoring and indemnity



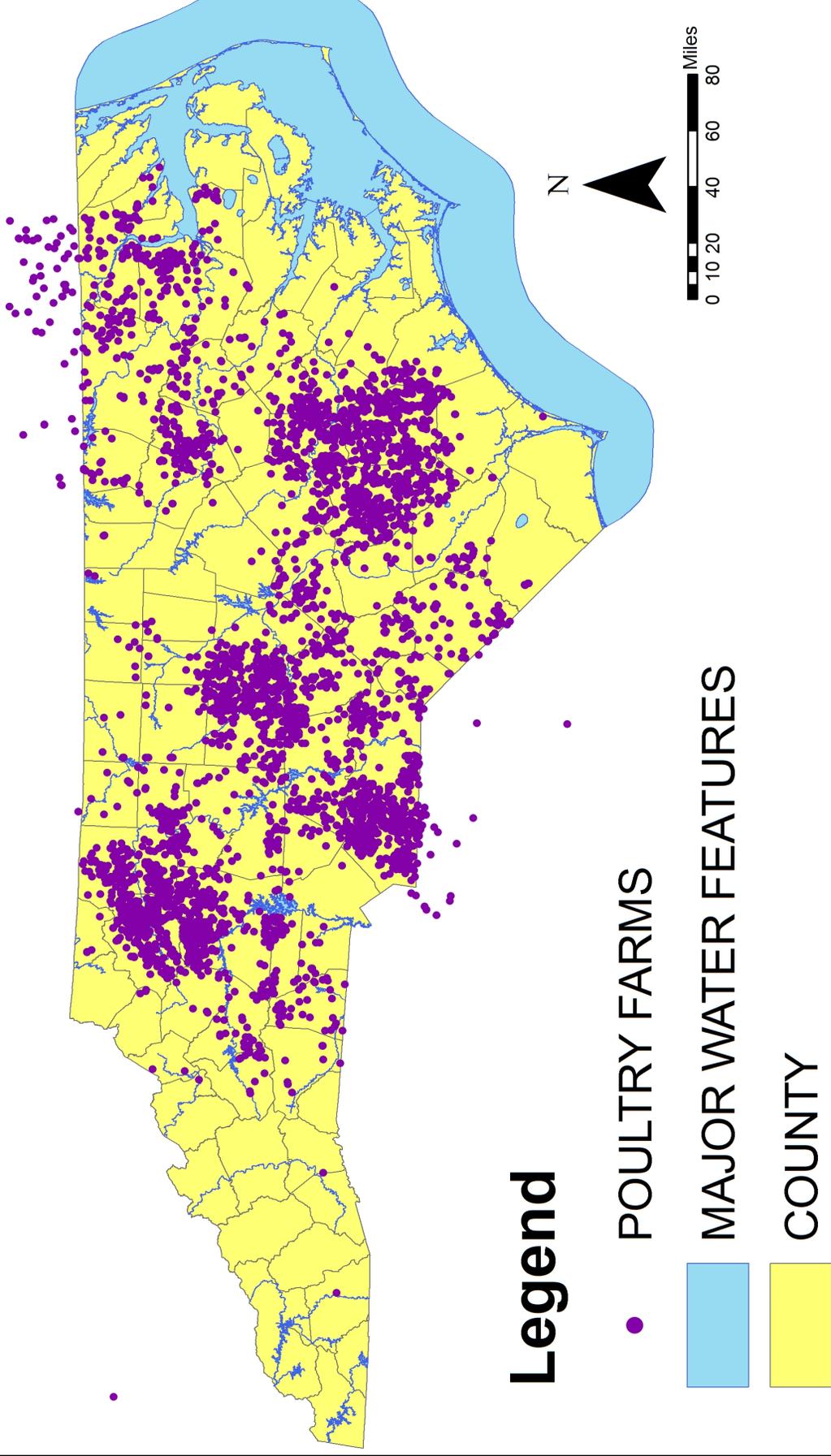


# Agribusiness Contributes \$68 Billion to NC's Economy

Source of NC Agricultural Receipts in 2003



# POULTRY FARMS NORTH CAROLINA





# North Carolina: Bird Surveillance

- NCDA&CS:
  - Domestic poultry: field surveillance and laboratory testing. Active and passive
  - Backyard birds, pet birds, auctions, fairs, exhibitions, flea markets
  - Wild bird: PCR matrix testing of samples collected by NC Wildlife Resources Commission and APHIS-WS



# NCDA&CS Surveillance: Field Activities

- Poultry Health Programs
  - Dr. Sarah Mason, Director
  - 13 Poultry Health Technicians
- Field surveillance and testing
- Industry
- Auctions, sales, shows, swap meets, etc.
- Investigate and test clinical disease events



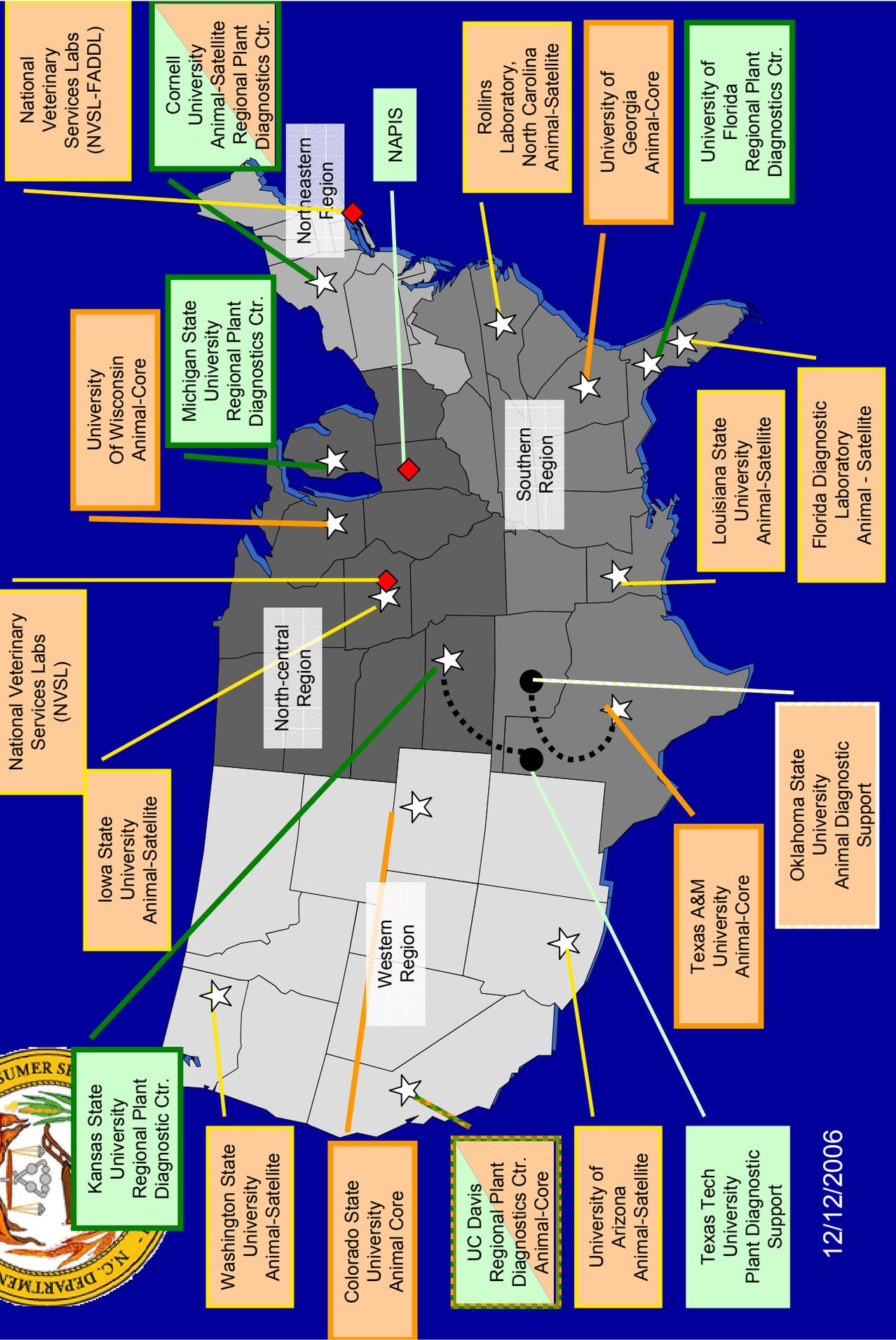
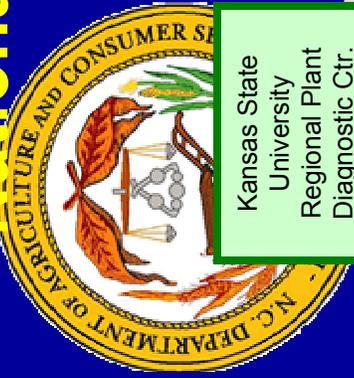


# NCDACS Surveillance & Early Detection: Veterinary Diagnostic Laboratory System



# National Animal & Plant Diagnostic Laboratory

## Networks



12/12/2006



# AI Surveillance in NC

## NCDA Veterinary Diagnostic Laboratory System

- All poultry submitted with respiratory disease
- Testing of all poultry on request
- Testing well above level required by the **National Poultry Improvement Program**
  - Requires routine testing of commercial breeder flocks
- Testing a representative sample of all broilers within 10 days of processing



# National Poultry Improvement Plan

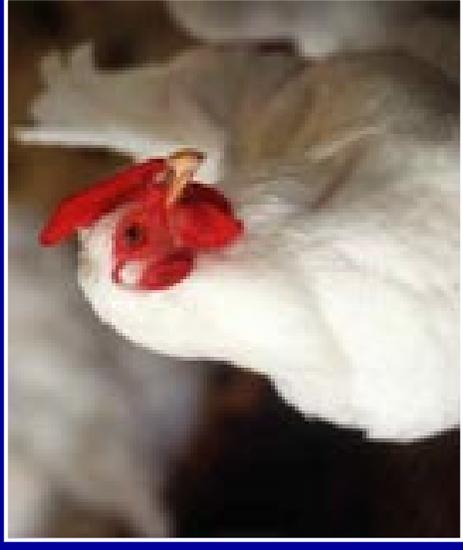
## AI Monitoring Program

- Breeder flocks: every 90 days
- Multiplier flocks: every 180 days
- Meat birds: within 10 days of slaughter (USDA interim rule). 95% of commercial broiler companies voluntarily complying since February 1, 2006
- Egg Layer flocks: every 90 days (egg yolk)
- Industry labs



# NCD&CS Surveillance & Detection: Veterinary Diagnostic Laboratory System

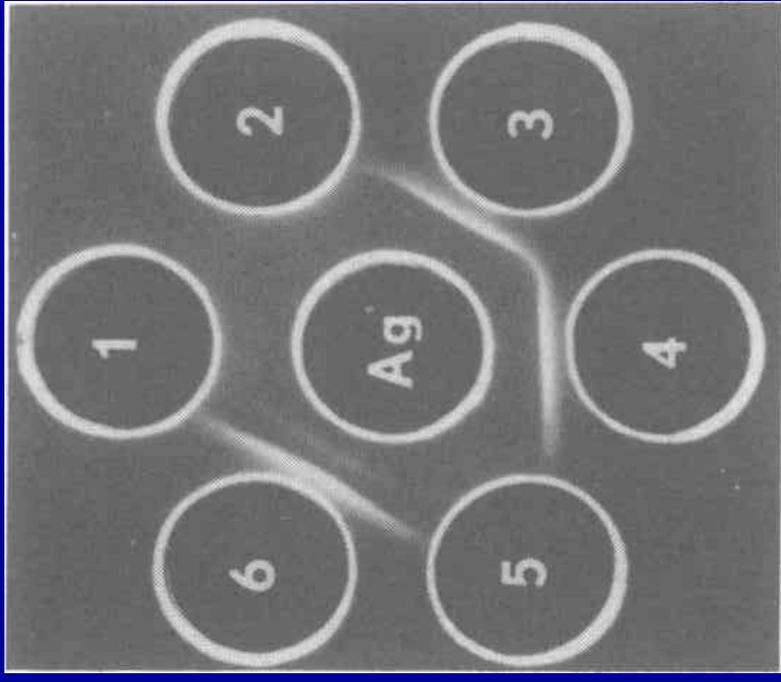
- Avian Influenza Testing
- National Animal Health Laboratory System facility
  - AGID
  - ELISA  
(combined 240,000 in 2006)
  - Flu Detect
  - rt-PCR (>1500 in 2006)





# NCVDLS: Avian Influenza Diagnosis

- AGID (Agar Gel Immunodiffusion):
  - Old gold standard
  - 24 hour turnaround time
  - Antibody detection-  
all type A influenzas





# NCVDLS: Avian Influenza Diagnosis

- ELISA:
  - High through-put for screening
  - Automated reader
  - Serum antibody detection





# NCVDLS: Avian Influenza Diagnosis

- Rapid flu test: Flu Detect (Synbiotics Inc.)
  - Detects Type A flu (similar to Directigen)
  - 15 minute test – tracheal swabs
  - Potential use for farm-side for screening during an event



# NCVDLS: Avian Influenza Diagnosis

- rt-PCR:
  - Detects viral genetic material from oropharyngeal or cloacal swabs
  - High throughput
  - Automated
  - 2 types of primers:
    - Matrix: AI type A screening
    - H5/H7: detection of H5 or H7

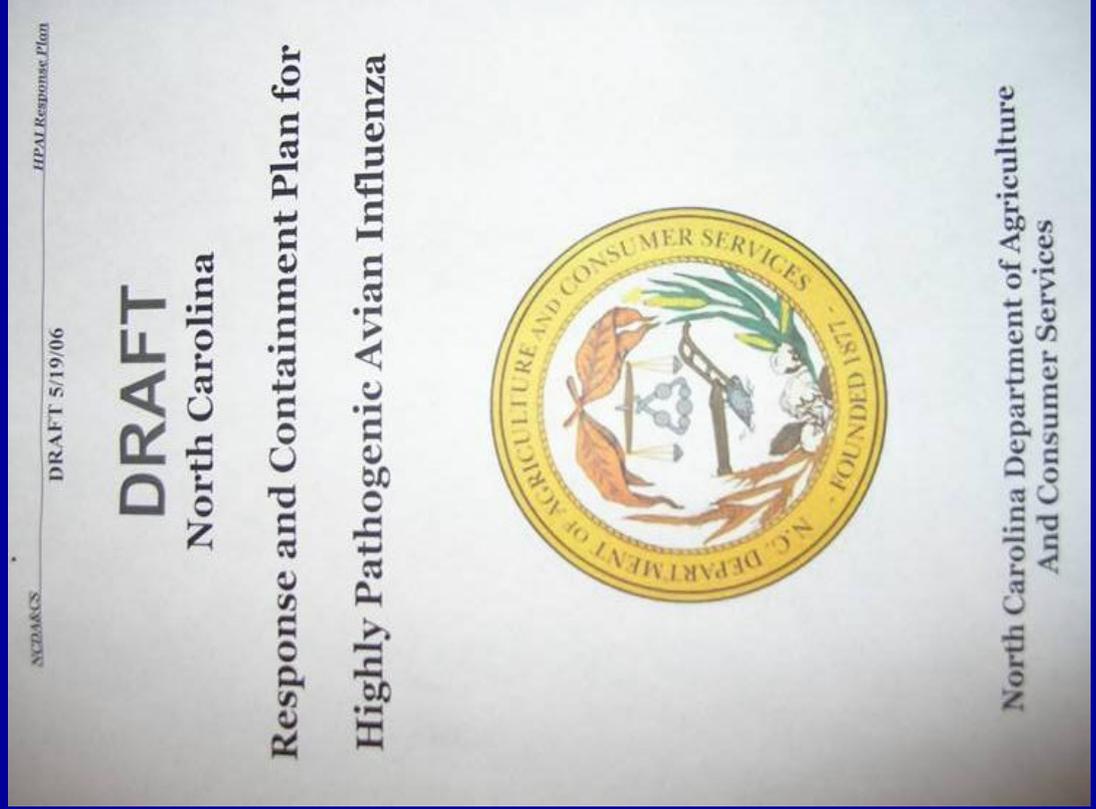


# H5+ or H7+: to NVSL

- If H5 or H7 detected by PCR:
  - Samples sent to the USDA National Veterinary Services Lab, Ames, Iowa, for official national confirmation
  - Gene sequencing and bird inoculation will occur to determine pathogenicity
  - This information directs the level and aggressiveness of the sustained response.



# NCDA&CS HPAI Response Plan



NCDA&CS

DRAFT 5/19/06

HPAI Response Plan

## DRAFT North Carolina

### Response and Containment Plan for Highly Pathogenic Avian Influenza



North Carolina Department of Agriculture  
And Consumer Services



# Key plan components:

- Surveillance, epidemiology, and testing
- Movement restrictions
- Euthanasia
- Disposal
- Recovery/ business continuity



# Surveillance Reporting Requirement

- By State Law: licensed veterinarians must report to State Veterinarian (SV) within 2 hours if disease is “reasonably suspected”
- Close industry relationship is vital to open communication
- Clinical signs of HPAI and Exotic Newcastle Disease are similar - both are reportable

# Quarantine of affected and dangerous contact premises

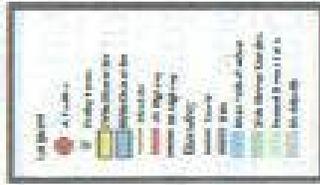




# Surveillance

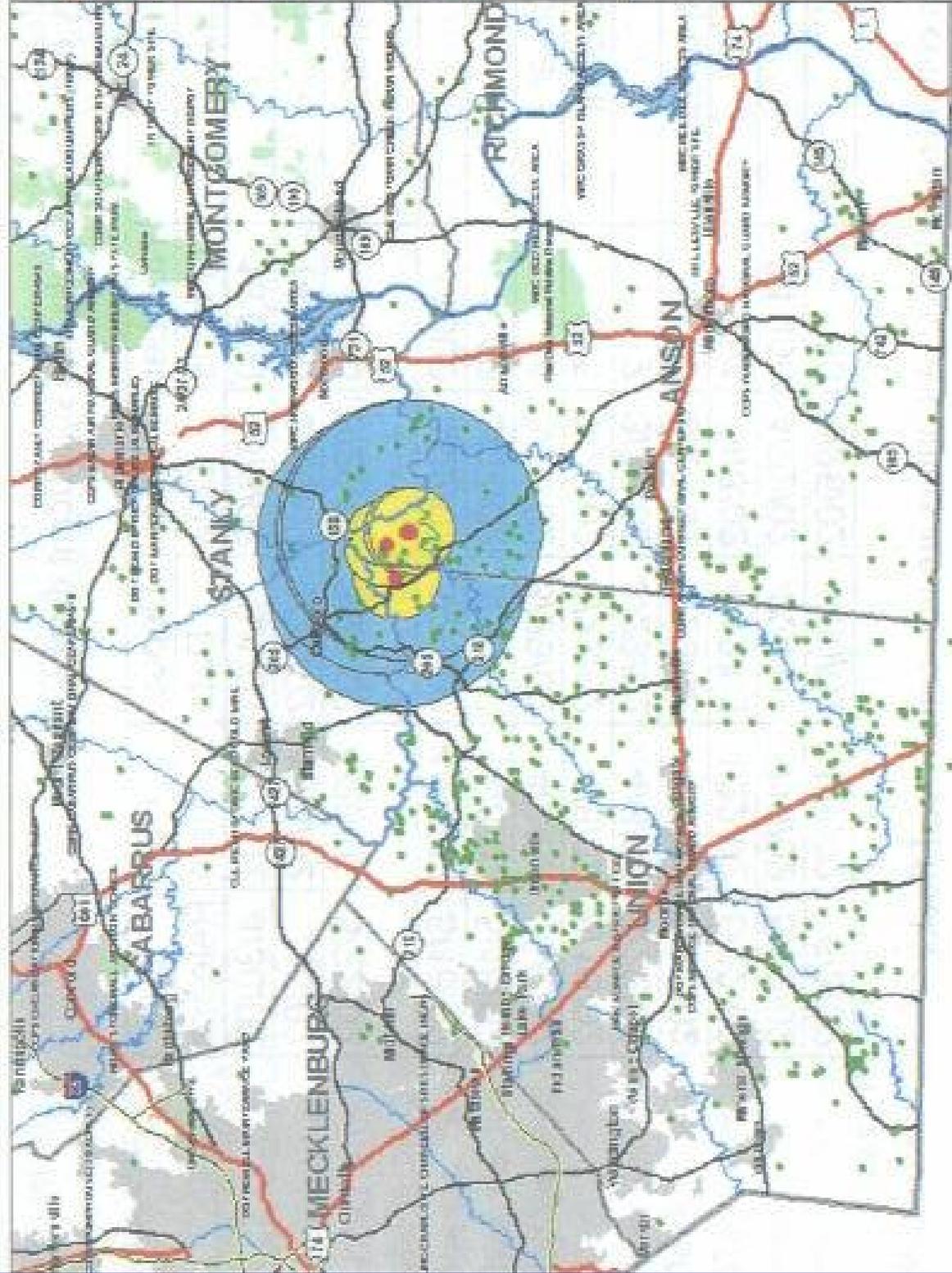
- Using GIS and poultry database, produce map of affected area for evaluation.
- Immediately increase surveillance in zones as determined by poultry density, virus type, pathogenicity, etc.

# Avian Influenza: North Carolina, 2002



The State of North Carolina  
 Department of Health and Human Services  
 Division of Public Health  
 1100 North Salisbury Street  
 Raleigh, NC 27601-1000  
 www.dhhs.gov

This map is a representation of the data provided by the North Carolina Department of Health and Human Services. It is not intended to be used for medical or legal purposes. The information on this map is for informational purposes only.

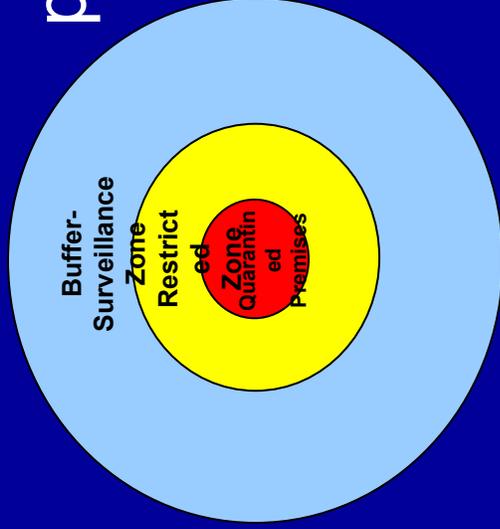


This map shows the distribution of avian influenza cases in North Carolina in 2002. The cases are concentrated in the Triangle region, with a significant cluster in the Research Triangle area. The map also shows the locations of major cities and highways throughout the state.



# Surveillance

- Quarantined: all sampled first 24 hours
- Restricted: all flocks first 48 hours
- Buffer-Surveillance: flocks within 48 hours of slaughter
- Daily phone calls to check mortality
- Barrel surveillance on any farm with mortality > 3 birds per 1,000





# Depopulation:

- Infected premises
- Contact-exposed premises- possibly





# Depopulation Options

- Carbon dioxide

- Water-based foam  
- recent USDA  
approval





# Disposal Options

- In-house composting – preferred method when possible
- Burial on farm - dependant on water table
- Rendering – sealed trucks, monitor routes
- Landfill – sealed trucks, monitor routes, immediate burial

# Quarantine Release Requirements Cleaning & Disinfection of Houses





# Recovery

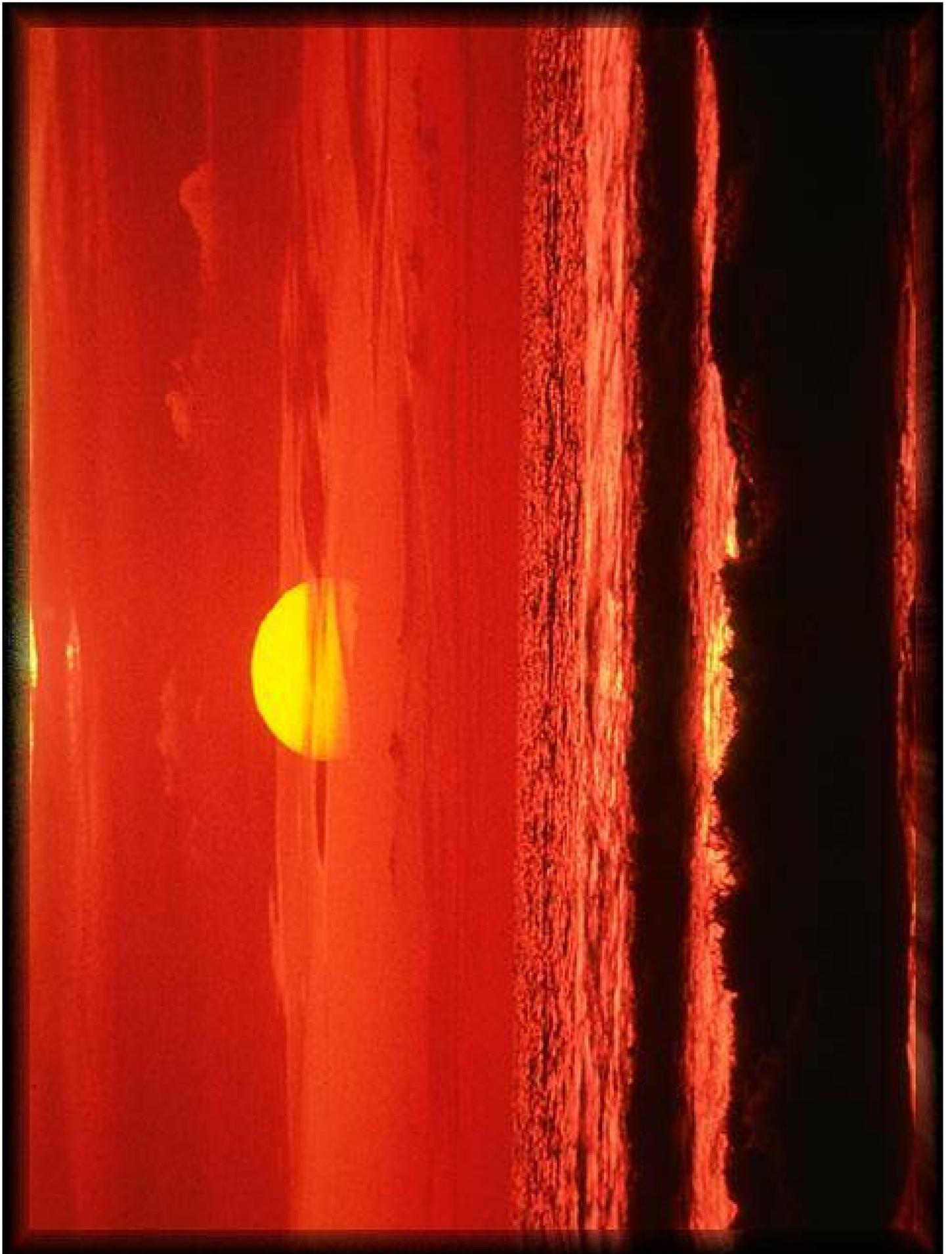
- Chick/poult placements delayed w/in the 2 mile zone to reduce susceptible population.
- Environmental sampling (litter, facility)
- Continued suspension of all poultry exhibitions, sales, and auctions.
- 100% indemnity for HPAI, as well as LPAI (participating states/producers)





# Take Home Messages

- NCDA&CS' active and passive surveillance for Avian Influenza in poultry is:
  - Expanding
  - Comprehensive
  - Real Time
- Insignificant viruses will continue to be found in avian populations
- RESPECT, but do not FEAR





# Virginia and NC 2002

- **Virginia (H7N2)**
  - 197 flocks, 5 counties
  - 4.7 million birds depopulated
  - \$130 Million industry losses
- **North Carolina (H7N2)**
  - Linked to LBM in Virginia and Pennsylvania
  - 12 Flocks 4 Counties
  - 63,605 birds depopulated

